

REMARKS

By this Amendment, Claims 6, 15, 26 and 27 are cancelled without prejudice to or disclaimer of the subject matter contained therein, and Claims 1, 10, 11, 13, 14, 17-19 and 21 are amended, leaving Claims 1-5, 7-14, 16-25 and 28-30 pending in the application. Features of cancelled Claim 26 are recited in Claim 1. Claims 22-25 were withdrawn from consideration.

Applicants submit that the claim amendments: (a) do not add new matter; (b) do not raise any new issue that would require further search and/or consideration because independent Claims 1, 10 and 17 are amended to include the features of cancelled dependent Claims 6, 15 and 27, respectively, and thus the subject matter of amended Claims 1, 10 and 17 was previously considered by the Examiner; (c) do not add any new claims; and (d) place the application in better condition for appeal. Accordingly, it is respectfully submitted that the amendments should be entered. Favorable consideration and allowance are respectfully requested in light of the following remarks.

Personal Interview

Applicants thank Examiner Zervigon for conducting a personal interview with their undersigned representative on October 4, 2006. Applicants' separate record of the substance of the interview is incorporated in the following remarks.

Objections to Drawings and Specification

The Official Action objects to the drawings under 37 C.F.R. § 1.84(p) for the reasons stated at pages 2-4 of the Official Action.

As was discussed during the interview, in the Amendment filed on May 12, 2006, the specification and drawings were amended to address each objection to the drawings and specification set forth in the Official Action dated February 15, 2006.

At point (1), page 2, of the final Official Action, it is asserted that the reference number "131" designates the "upper portion," "threads" and "external threads." As was discussed during the interview, the reference number 133 was added to Figure 10 by the May 12, 2006, Amendment, to indicate the location of the "upper portion." By this Amendment, the specification is amended at paragraph [0041] to change "threads 131" to "external threads 131" for consistency. Accordingly, Applicants submit that this objection has been overcome.

The objections set forth at points (2) and (3), pages 2 to 3, of the final Official Action were also discussed during the interview. The final Official Action asserts that the reference number "12" designates both the "second member" and the "inner electrode member," and the reference number 14 designates both the "second member" and the "outer electrode." A preferred embodiment of the upper electrode includes the inner electrode member 12 and outer electrode member 14. See paragraph [0021] of the specification as was amended in the Amendment filed on May 12, 2006. The upper electrode is also described in the application as a "second member." That is, the upper electrode is an exemplary embodiment of the "second member." Applicants submit that the drawings are consistent with the specification and claims with respect to the second member and the upper electrode.

In the objections set forth at points (4) and (5), pages 3 to 4, of the final Official Action, it is asserted that the reference number "18" designates both the "backing plate" and "first member," and the reference number 22 designates both the

"backing ring" and "first member." A preferred embodiment of the backing member includes the backing plate 18 and outer backing ring 22. See paragraph [0024] of the specification as amended in the Amendment filed on May 12, 2006. The backing member is also described in the application as a "first member." That is, the backing member is an exemplary embodiment of the "first member." Applicants submit that the drawings are consistent with the specification and claims with respect to the backing member and the first member.

Lastly, in the objection set forth at point (6), page 4, of the final Official Action, it is asserted that the reference number "24" designates both the "top plate" and "third part." See amended paragraph [0025] of the specification set forth in the Amendment filed on May 12, 2006. The top plate is also described in the application as a "third member." That is, the top plate is an exemplary embodiment of the "third member." Applicants submit that the drawings are consistent with the specification and claims with respect to the backing member and the third member.

Accordingly, withdrawal of the objections is respectfully requested.

Rejections Under 35 U.S.C. § 103

A. Claims 1-21 and 27-30 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,818,096 to Barnes et al. ("Barnes") in view of U.S. Patent No. 5,766,344 to Ishida et al. ("Ishida") for the reasons stated at pages 4-13 of the final Official Action. Claims 6, 15, 26 and 27 are cancelled. The rejection is respectfully traversed.

Claim 1, as amended, includes the features of cancelled Claim 6. Claim 1 recites a component of a plasma processing apparatus, which comprises a first

member bonded to a second member, the first member including a plurality of through apertures having a first portion and a second portion wider than the first portion; and a plurality of first fastener members each mounted in an aperture of the first member, each first fastener member including a non-circular shaped head configured to prevent rotation of the first fastener members relative to the first member, the head having a bearing surface facing a surface that at least partially defines the second portion of the aperture (emphasis added).

Applicants submit that the combination of Barnes and Ishida does not suggest the combination of features recited in Claim 1. Figure 1 of Barnes is a cross-sectional view of the plasma reactor electrode structure. As was discussed during the interview, Figure 1 of Barnes does not show a first fastener member having a non-circular shaped head configured to prevent rotation of the "first fastener member" relative to a first member, as recited in Claim 1. Barnes does not suggest an electrode structure including, *inter alia*, the features of "a plurality of first fastener members each mounted in an aperture of the first member, where each first fastener member includes a non-circular shaped head configured to prevent rotation of the first fastener members relative to the first member" (emphasis added), as recited in Claim 1.

Applicants respectfully submit that Ishida does not provide the required motivation to modify Barnes' electrode structure to include every feature of Claim 1. The Official Action asserts that it would have been obvious to add Ishida's "first fastener members" (i.e., the heat conductor 109) to Barnes' apparatus (Official Action at page 12, lines 16-17). The Official Action also asserts that Ishida's "first fastener members" 109 (i.e., heat conductors 109) are bonded with an elastomer

(i.e., O-rings 31a shown in Figure 3) (Official Action at page 12, lines 13-15).

Applicants respectfully disagree.

As shown in Figure 2 of Ishida, the heat conductor 109 is a plate or grid having rectangular spaces 109a between the frame 109b and crossing bars 109c. Thread holes 33a are formed in the crossing bars 109c, and O-rings 31a are placed in the thread holes 33a. First bolts 30a are received in the thread holes 33a to attach the temperature controlling plate 106 to the heat conductor 109.

Figure 3 of Ishida shows a cross-section through the heat conductor 109 at the location of a thread hole 33a. Figure 4 of Ishida shows a cross-section through the heat conductor 109 at the location of a hole 32b. The portions of the heat conductor 109 shown in Figures 3 and 4 of Ishida are integral with the remainder of the heat conductor 109 depicted in Figure 2. The portions of the heat conductor 109 shown in Figures 3 and 4 of Ishida are surrounded by the space 109a, but are not mounted in an aperture of a first member, as recited in Claim 1. Applicants submit that Ishida does not suggest that the heat conductor 109 shown in Figures 3 and 4 includes a non-circular shaped head configured to prevent rotation of those portions relative to a first member.

Applicants respectfully submit that Ishida does not provide the required motivation to modify Barnes' electrode structure to result in the component recited in Claim 1. Even if Barnes' electrode structure was modified in view of Ishida, the resulting structure would not include at least the features of "a plurality of first fastener members each mounted in an aperture of the first member, each first fastener member including a non-circular shaped head configured to prevent rotation

of the first fastener members relative to the first member,” as recited in Claim 1.

Accordingly, Claim 1 is patentable over the applied combination of references.

Dependent Claims 2-5 and 7-9 are also patentable over the applied references for at least the same reasons as those for which Claim 1 is patentable.

Independent Claim 10, as amended, recites the features of cancelled Claim 15. Claim 10 recites a component of a plasma processing apparatus, which comprises a second member including an attachment surface and an exposed surface adapted to be exposed to an interior of a plasma processing chamber; a first member including a first surface spaced from a second surface, the first surface being bonded to the attachment surface of the second member, the first member including axially extending apertures extending between the first surface and the second surface, each of the apertures including a first portion opening in the first surface and a second portion opening in the second surface, the first portion being wider in a transverse direction than the second portion; and T-nuts having a T-shape located in the second portions of the apertures (emphasis added).

Barnes does not suggest a T-nut having a T-shape, as recited in Claim 10. Accordingly, Barnes does not suggest an electrode structure including, *inter alia*, the features of “the first member including axially extending apertures extending between the first surface and the second surface, each of the apertures including a first portion opening in the first surface and a second portion opening in the second surface, the first portion being wider in a transverse direction than the second portion; and T-nuts having a T-shape located in the second portions of the apertures (emphasis added). Ishida does not cure the deficiencies of Barnes. Accordingly, Claim 10 is also patentable over the applied references.

Dependent Claims 11-14, 16 and 28 are also patentable over the applied references for at least the same reasons as those for which Claim 10 is patentable.

Independent Claim 17 has been amended to include the features of cancelled Claim 27. Claim 17 recites showerhead electrode assembly for a plasma processing apparatus, the showerhead electrode assembly comprising a silicon electrode having gas injection openings; a graphite backing member secured to the silicon electrode, the backing member including a plurality of through apertures each having a first portion and a second portion wider than the first portion; a top plate including a plurality of through openings each of which is aligned with a respective aperture in the backing member; a plurality of T-nuts having a T-shape, each T-nut being mounted in a respective aperture of the backing member, each T-nut including a bearing surface facing a surface at least partially defining the second portion of the apertures; and a second fastener member engaged with each T-nut to secure the backing member to the top plate (emphasis added).

For reasons discussed above, the combination of Barnes and Ishida also does not suggest a showerhead electrode assembly comprising every feature recited in Claim 17, including, *inter alia*, "a plurality of T-nuts having a T-shape, each T-nut being mounted in a respective aperture of the backing member, each T-nut including a bearing surface facing a surface at least partially defining the second portion of the apertures; and a second fastener member engaged with each T-nut to secure the backing member to the top plate (emphasis added). Accordingly, Claim 17 is patentable over the applied combination of references.

Dependent Claims 18-21, 29 and 30 are also patentable over the applied references for at least the same reasons as those for which Claim 17 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

B. Claim 26 stands rejected under 35 U.S.C. § 103(a) over Barnes in view of Ishida, and further in view of U.S. Patent No. 5,681,135 to Simonson et al. for the reasons stated at page 13 of the final Official Action. Claim 26 is cancelled, making this rejection moot.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

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